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# THE RELATIONSHIP BETWEEN SNYDER V (DhMg-6) AND SNYDER I (DhMg-4) BASED ON CERAMIC ANALYSIS

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## ABSTRACT

This report argues that DhMg-6, previously identified as the southern half of Snyder I (DhMg-4), should be a separate site, Snyder V. It finds that the ceramics at Snyder V belong to the Mortlach Tradition, Fort Yates Phase, and Late Northern Plains Pattern, and that the ceramics at the northern side of Snyder I are from the Harmon Complex. Based on this, it was concluded that the two sites, separated by the Gainsborough Creek in southwestern Manitoba, represent different occupations, and it finds an example of great intrasite variability in a region that shows great intersite variability.

## INTRODUCTION

There is a dense cluster of pre-contact archaeological sites at the confluence of Gainsborough Creek and the Souris River, an area called the Gainsborough-Souris Locality, which is in southwestern Manitoba just south of Melita. The artifacts in this report's analysis were acquired in the early 1970s, when E. Leigh Syms and Ronald Nash conducted surveys and excavations in this area. The Gainsborough-Souris Locality was selected because previous research had been done there, and because of its variety of archaeological sites and physiographic features (Syms 1977: 3). In the areas that would become Snyder I and Snyder V, Syms and Nash each conducted a survey (Syms 1980:146), and Syms also dug test pits on the north side of the creek at Snyder I. No excavation was done in Snyder V; all artifacts were collected in surface surveys conducted by Syms and Nash. Other sites excavated include Snyder II, Snyder Dam, the Brockinton Site, and several others.

Over the coming decades, archaeological research in the Gainsborough-Souris Locality continued. B. A. Nicholson conducted extensive research on the Vickers Focus, which is located in southwestern Manitoba around the Gainsborough-Souris Locality, and he argued for the presence of agriculture in the area (Nicholson 1991, 1994, 2008; Nicholson and Hamilton 1997, 1999; Nicholson et al., 2006; Mokelki, 2007). In 2006, Syms, Terry Gibson, Scott Hamilton, and Chris Hamilton revisited Snyder II to conduct a magnetic survey at the storage pits Syms found in the early 1970s, where they found abundant evidence of agriculture (Syms et al., 2006; Nicholson et al., 2006). Matthew Boyd, Sonia Zarillo, and Clarence Surette have found evidence of maize consumption in the

Gainsborough-Souris Locality sites, and other areas of Manitoba as far north as The Pas, via encrustation analysis on pottery (Boyd 2002, 2008, 2010a, 2010b; Zarillo and Kooyman, 2006; Boyd and Surette, 2010). Finally, from 2002 to 2007, the SCAPE project studied human-environment interaction (Nicholson and Wisemann, 2007). It made great contributions to landscape archaeology and paleoenvironmental research by showing how artifacts are deposited into a complex environment shaped by cultural, biological, and environmental factors.



Fig. 1. Geographic context of the Gainsborough-Souris Locality. Site locations are based on a hand-drawn map by E. Baryshaw, available in the Manitoba Museum.

must be the same site and they must be occupied by the same people at the same time. However, Syms (pers. comm.) suspected that the two sides of the river are actually very different. To explore that hunch, two projects were completed. First, the original report on the Harmon Complex, found at DhMg-4, was updated to reflect recent developments (Syms and Wiecek, 2010). Second, the relationship between the two sides of Snyder I was re-examined. The research described in this report includes a re-analysis of the relationship between the two sides of the river through a comparative description of the DhMg-6 ceramics.

In 2009 and 2010, Syms led re-analyses of the Gainsborough - Souris Locality sites to incorporate all of the new research that had been done over the previous forty years. First, the Brockinton Site was re-analyzed by a team of Manitoba Museum archaeologists and volunteers (Skalesky et al., 2009). It compared the ceramics of Occupation 3 with a broad range of other archaeological sites in Manitoba, and found that the Williams Complex is unique to the Brockinton Site.

The next year, the Snyder I site was revisited. At the time, Snyder I included both DhMg-4, the north side of Gainsborough Creek, and DhMg-6, the south side of the Creek. It was assumed that because they are right across the creek from each other, they

## **GEOGRAPHY AND NATURAL RESOURCES**

### ***INTRODUCTION AND TOPOGRAPHY***

Southwestern Manitoba is bounded by the Saskatchewan border on the west, the United States border on the south, the watershed between the Assiniboine and Souris Rivers on the north, and the Tiger Hills to the east. This area is part of the Saskatchewan Plain, which is bounded on the west by the Missouri Couteau and on the east by the Manitoba Escarpment (Syms 1977:14). In their soil survey, Ellis and Schafer (1974) identify six major physiographic regions in southwestern Manitoba: the Souris Basin, the Tiger Hills, the Lauder Sandhills, Turtle Mountain, the Waskada Till Plain, and the Reston-Tilston Park Area.

The Gainsborough-Souris Locality falls within the Souris Basin. This area is a broad valley around the Souris River, shaped by the glaciers at the end of the Pleistocene Epoch. These glaciers had a huge impact on the landscape by laying down large amounts of glacial sediment, and today the area consists of lacustrine sediments surrounded by boulder till. The western half of the Basin consists of the Souris River and many oxbow lakes, and the eastern half consists of paleochannels called the Blind Souris channels, which are dry grassland.

The immediate vicinity of the Gainsborough-Souris Locality, beyond the Souris Basin, includes the Tiger Hills, Turtle Mountain, the Waskada Till Plains, and the Reston-Tilston Park Area. The Tiger Hills is an area with undulating to sharply morainic topography, with basins and hills. The area has poor drainage, and there are many small bodies of water and a great diversity of plants, animals, and habitats. Turtle Mountain is an unglaciated till remnant that rises 700 feet above the surrounding area, covered with deciduous forests with many small lakes, sloughs, and meadows. The Waskada Till Plain is a gently rolling area of glacial till between Turtle Mountain and the Souris River. The central area is a dry lake bed with lacustrine sediments. Finally, the Reston-Tilston Park Area is grassy boulder till dotted with numerous small stands of trees. These trees grow around small undrained depressions, and contain water intermittently after periods of rain or heavy snowfall. The climate of the extreme southwestern Manitoba area is semi-arid and quite variable, and has more in common with southern Saskatchewan and southern Alberta than the rest of Manitoba.

### ***PLANT AND ANIMAL RESOURCES***

Three cultivated plants were present in the Gainsborough-Souris Locality: maize (*Zea mays*), beans (*Phaseolus vulgaris*), and Native rice. Maize is completely domesticated: it cannot reproduce on its own. It must be sown by humans, therefore it is impossible for maize to grow wild. There is much evidence both that maize was consumed at Snyder V and Snyder I and that it was grown at Snyder II (examples of this include Boyd et al. 2008; Boyd and Surette 2010 and Boyd et. al. 2006).

Domesticated beans were also present at those sites, but in smaller quantities than maize (less than half). The third cultivated plant is Psinomani (Native rice; *Zizania palustris*). It has also been found in the Gainsborough-Souris Locality, even though southwestern Manitoba is well outside the normal distribution of Native rice (Syms



1977:17). It is normally found wild in Minnesota, therefore it was introduced by either humans or animals. There has not been sufficient laboratory work done to prove or disprove that Native rice was domesticated. Very detailed laboratory analysis has been done on domesticated plants in the eastern United States, but not on plant remains in southwestern Manitoba. We cannot say with certainty whether Native rice was domesticated or merely cultivated. Finally, there are indications that tobacco, which is domesticated in North Dakota, was present in the Gainsborough-Souris Locality, in that a catlinite smoking pipe has been found in the area.

The most important faunal resource is bison. Birds came in vast flocks, and through sheer numbers were an intensive resource. Fish were an intensive resource when they spawned from April to June. Species included northern pike, catfish, sucker, yellow perch and burbot.

### ***CULTURES OF THE AREA***

The farmers of the Missouri River in North Dakota and the bison hunters of Alberta and Saskatchewan had extensive contact in this area. The ceramics of this area are very diverse. The cultures represented in this report are the Mortlach Tradition, the Williams Complex, the Harmon Complex, and the Fort Yates Phase, as well as sherds that cannot be assigned to a more specific taxon and are therefore assigned to Late Northern Plains Pattern (LNPP). Taxonomic hierarchies and levels are highly inconsistent in the archaeology of the Northern Plains. In this report, Pattern is the highest taxon in the hierarchy, and Phase, Complex, and Tradition are more specific taxa within that (see Skalesky et al., 2009: 56 for a discussion of the taxonomic issues).

The Mortlach Tradition is named for the town of Mortlach, which is located in southern Saskatchewan, just west of Moose Jaw. Walde's definition is based on decorations and surface finish (Walde 2003, 2006, 2010). Mortlach pottery is found in southern Saskatchewan and Alberta – the Northwestern Plains – and dates from 1500 to 1700 CE (Syms *et al.*, 2014).

The Fort Yates Phase is named for the town of Fort Yates, which is located on the Missouri River, just north of the border between North Dakota and South Dakota. Fort Yates Phase pottery is part of the Middle Missouri tradition, and is commonly found in sites along the Missouri River (Calabrese 1972, 1973). Fort Yates pottery has S-shaped rims and Cord Impressed decoration. Calabrese (1972) states that in the Upper Knife-Heart region, Fort Yates ware is absent at some sites by A.D. 1450, but persists later in a Terminal Middle Missouri variant site. This suggests that at least some Fort Yates ware could be found as late as the 16<sup>th</sup> century.

Late Northern Plains Pattern is a more general taxon that consists of pottery that lacks the diagnostic features of more specific taxa.

This report also includes comparisons with two other Gainsborough-Souris Locality cultures: the Harmon Complex of Snyder I (Syms and Wiecek, 2010), and the Williams Complex of the Brockinton Site (Skalesky et al., 2009). The Williams Complex dates from 1400 to 1600 CE, and the Harmon Complex dates from 1450 to 1600 CE (Syms *et al.*, 2014).

## DESCRIPTION OF THE CERAMICS

The ceramic collection that Syms and Nash gathered from Snyder V consists of rimsherds and bodysherds (see Appendix A for a summary of ceramic artifacts). The items in this sample have not been glued together, and the analysis is based on individual sherds rather than reconstructed vessels (Table 1). The sherds have been divided into three categories: the Mortlach Tradition of the Northern Plains, the Fort Yates Phase of North Dakota, and the Late Northern Plains Pattern. Recent analyses of other Gainsborough-Souris Locality ceramics include Syms and Wiecek (2010) and Skalesky et al. (2009).

The Mortlach Tradition sherds constitute a sizeable portion of the sample (15 out of 54, or 27.8%), and they are related to many sites in Saskatchewan and Alberta. In Walde's definition of the Mortlach Tradition, the most common decorations use "dentate stamps, cord wrapped objects [CWO], quills, solid tools, pointed tools, notched tools and fingers" (Walde 2003:60). Cord wrapped objects includes CWO Impressed (CWOI). Fingers includes Fingernail Impressed and Finger Pinched. Solid tools and pointed tools could produce Notching, Punctates, and Bosses. This accords well with the Mortlach Tradition section of the Snyder V sample, which contains CWOI (5), Notching (3) and Incised, Cord Impressed, CWBI, Finger Pinched (1) and Roulette Stamps (1). This accords only somewhat well with the Late Northern Plains Pattern section of the sample, which contains Incised and Simple Stamped (3 each), Stab and Drag (2), Combed (2), Notching (1), Cord Impressed (1), and Piceated (1). This also includes the Fort Yates Phase and Williams samples, where the most common decorations are Cord Impressed and Cord Wrapped Object Impressed, respectively. However, those two samples completely lack the other decorations in the definition of the Mortlach Tradition.

In surface finish, Walde defines Mortlach Tradition as having smooth, paddled, and check-stamped decoration. Across the entire Snyder V sample, the vast majority of sherds have a fine or sandy smooth finish. The remainder have Obliterated (2), Stamped (1), and Textile (1). The Late Northern Plains Pattern sherds are similar: the dominant decorations are Fine Smooth and Sandy Smooth, and the minority includes Obliterated (5), Burnished (3), Textile (2), and Cord Wrapped Paddle (1). The Fort Yates Phase and sherds are all smooth.

The Fort Yates Phase sherds, on the other hand, comprise a small minority of the sample (4 out of 54, or 7.4%) and they are related to the agricultural villages of the Middle Missouri area in North Dakota.

The Late Northern Plains Pattern sherds constitute the largest group (35 out of the 54, or 64.8%). They include many specimens that cannot be assigned to a more specific taxon, as well as a few pieces that demonstrate possible Oneota influence.

## CERAMIC DECORATIONS

### MORTLACH TRADITION DECORATION

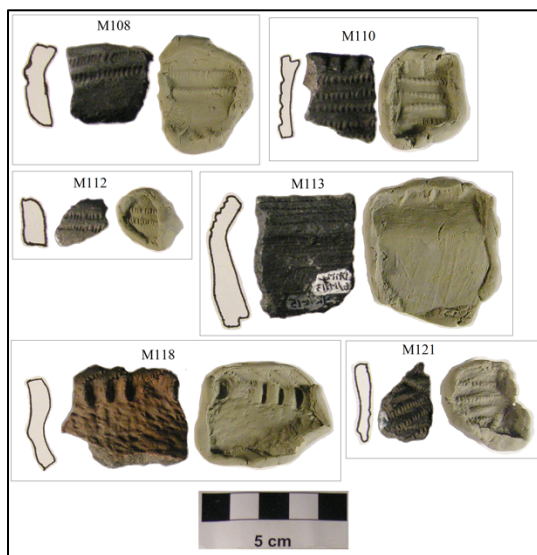
All decorations are described in *Manual of Detailed Attribute Fields for Cataloguing of Precontact Ceramics* (Syms and Dedi, 2007). See Table 1 for a breakdown of the Snyder V

Mortlach Tradition decorations. The most common decoration in the Mortlach Tradition sherds is Cord Wrapped Object Impressed, which occurs on six sherds out of thirteen (Fig. 2). The number of rows ranges from two to six. In three sherds there are two to five straight rows of impressions. One example has six rows at different angles that intersect each other. Another has four angled rows near the lip that end about a centimetre down.

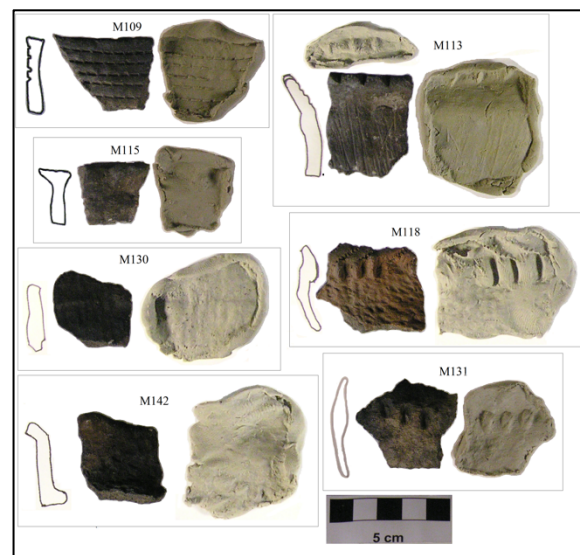
*Table 1. Decorations for Mortlach Tradition Rimsherds from Snyder V*

Decoration	Catalogue No.	Count	Percent
CWOI	108, 110, 112, 118, 121, 142	6	40%
Notching	110, 113, 115	3	20%
Cord Impressed	113	1	6.7%
Fingernail Pinched	115, 118	2	13.3%
Dentate Stamps	109	1	6.7%
Simple Stamped	131	1	6.7%
None	130	1	6.7%
Sum		15	100.1%

The Mortlach Tradition sherds also show some Cord Impressed decoration, which occur in two sherds out of fourteen (Fig. 3). One sherd has four nearly-horizontal rows on the outside, which are slightly curved. The other sherd has four straight horizontal rows on the inside. They are located in the shoulder. It is common to find some Cord Impressions in Mortlach Tradition sherds, a feature also seen in Fort Yates Phase sherds from the Middle Missouri region to the south (Walde 2003:85).



*Fig. 2. Mortlach Tradition sherds from Snyder V that show CWOI*



*Fig. 3. Mortlach Tradition sherds from Snyder V that show decorations other than CWOI.*

The Mortlach Tradition sherds show three examples of Notching decoration (including one on the lip), Cord Impressed decoration (1), Fingernail Pinched decoration (2), Dentate Stamped decoration (1), Simple Stamped decoration (1), and no decoration (1) (Fig. 3). Sherd M113 has deep notches on the lip, cord impressions on the inside of the rim (four rows), and it has vertical grooves on the outside rim. M108 has two lines of cord impressions on the outside, and M110 has four clearly visible rows of cord impressions on the outside, along with visible traces of a fifth row at the bottom edge of the sherd. The lip has a channel in the middle. M109 has shallow notches in the lip, and six rows of straight horizontal stamps. M112 has two rows of cord impressions (it is also much smaller than the other sherds), and M115 has notches in the lip and fingernail pinching. M118 has oblique rows of cord impressions on the rim near the lip, and below them it has short vertical ridges produced by fingernail pinching. M121 has several rows of cord impressions that run in a variety of directions, and M131 has one row of large round stamps.

#### FORT YATES PHASE DECORATIONS

All four Fort Yates Phase sherds have Cord Impressed decorations (Fig. 4). The smallest has two rows that cover the entire surface. The large sherds (M111, M114, M143) have about ten rows of Cord Impressions that also cover the entire surface. These rows are curved, and sometimes rows below trend upward and cover over the rows above.

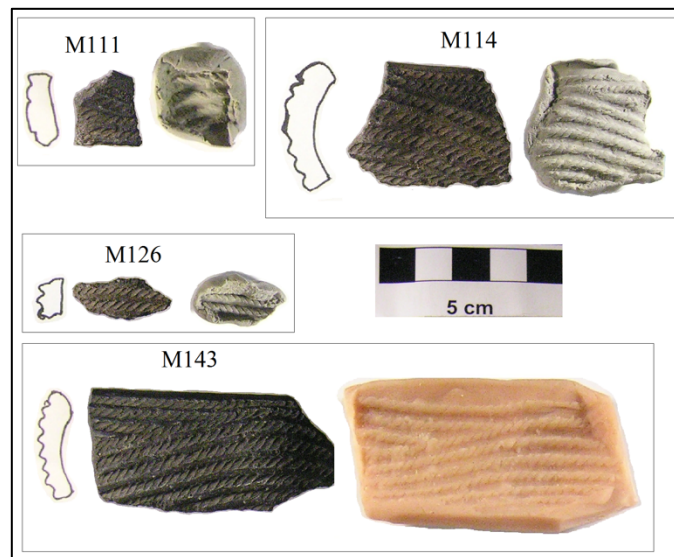


Fig. 4. Fort Yates Phase sherds from Snyder V.

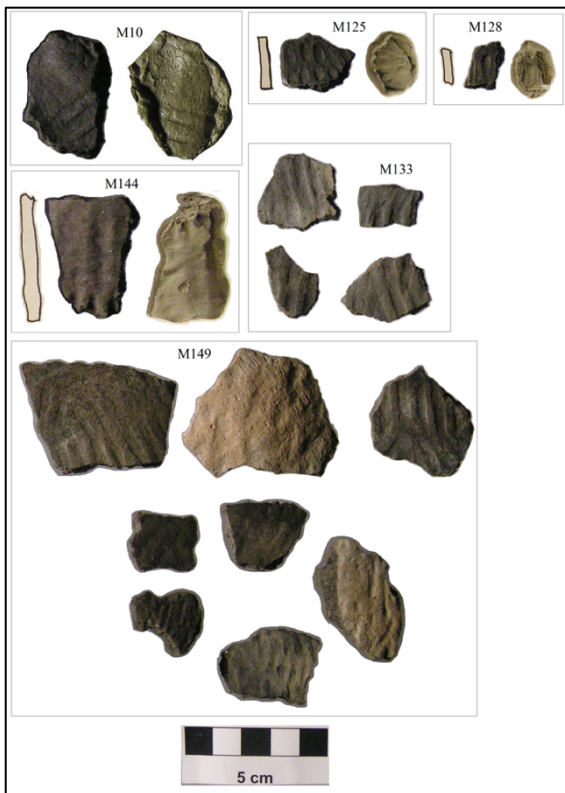
#### LATE NORTHERN PLAINS PATTERN DECORATIONS

The largest group of Late Northern Plains Pattern sherds is undecorated (16 sherds) (Table 2). Of those that are decorated, the largest group falls within the Simple Stamped category (6 sherds) (Fig. 5). The second largest is the specimens with Trailed decoration (4 sherds)

(Fig. 6). The remaining pieces show Incised decoration, Fingernail Incised decoration, Combed decoration, Cord Impressed decoration, Notched decoration, Fingernail Pinched decoration, and Piceated decoration (one to two each) (Fig. 7).

*Table 2. Late Northern Plains Pattern rimsherds and bodysherds from Snyder V*

Decoration	Catalogue No.	Count	Percent
Incised	9, 16	2	5.7%
Fingernail Incised	132	1	2.9%
Simple Stamped	10, 125, 128, 133, 144, 149	6	17.1%
Combed	123	1	2.9%
Cord Impressed	122	1	2.9%
Notching	116, 117	2	5.7%
Fingernail Pinching	15	1	2.9%
Piceated	134	1	2.9%
Trailed	7, 8, 146, 147	4	11.4%
None	5, 6, 11, 12, 13, 14, 33, 34, 35, 119, 120, 124, 127, 129, 135, 139, 145	16	45.7%
Sum		35	100.1%



M116 has notches on the outer edge of the lip, M117 has notches on the lip, and M119 has no visible decoration but there is a trace of some at the break. There is not enough decoration visible to positively identify it. M122 has one row of Cord Impressed decoration near the break, M123 has Combed decoration, and M124 has thin shallow grooves that run in various directions. M125 and M128 both have round shallow stamps, and M123 has Fingernail Incised decoration. M7, M8, M146, and M147 all have Trailed decoration. M9 and M16 have Incised decoration. M9 has one line near one end.

*Fig. 5. Late Northern Plains Pattern sherds from Snyder V that show Simple Stamped decoration.*



Fig. 6. Late Northern Plains Pattern sherds from Snyder V that show Trailed decoration and shell temper, common Oneota traits.

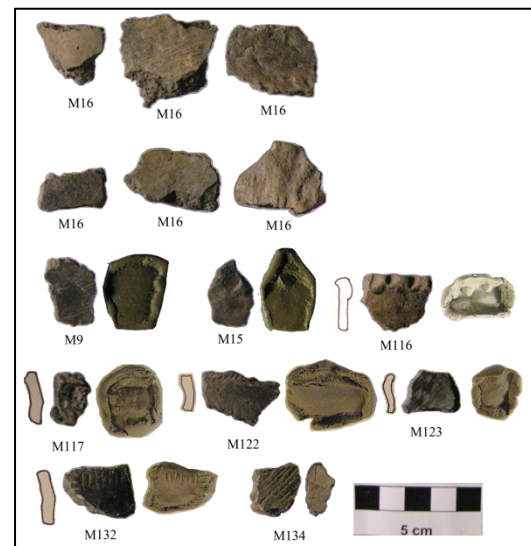


Fig. 7. Late Northern Plains Pattern sherds from Snyder V that show other decorations.

## RIM FORMS

### MORTLACH TRADITION RIM FORMS

The majority of Mortlach Tradition sherds have S-rims (7) (Table 3). One specimen has an Excurvate rim and another one has a Straight rim, and two specimens have undetermined rims. M108, M118, and M131 have pronounced S-rims. M109 and M110 exhibit shallow S-rims.

Table 3. Mortlach Tradition Rim Forms

Rim Form	Catalogue No.	Count	Percent
S-rim	108, 109, 110, 112, 115, 118, 131	7	63.6%
Excurvate	113	1	9.1%
Straight	130	1	9.1%
Undetermined	121, 142	2	18.2%
Sum		11	100%

### FORT YATES PHASE RIM FORMS

All four Fort Yates Phase sherds (M111, M114, M126, M143) have very pronounced S-rims.

## LATE NORTHERN PLAINS PATTERN RIM FORMS

The majority of sherds with identifiable rim forms display Excurvate rims (Table 4). A minority possesses S-rims, and M119, M120, and M123 have pronounced curves. M122 has a shallower curve, possibly due to size. M129 has a shallow S-rim.

*Table 4. Late Northern Plains Pattern Rim Forms*

Rim Form	Catalogue No.	Count	Percent
Excurvate	10, 11, 119, 122, 123, 124, 125	7	70%
S-rim	120, 129	2	20%
Shallow S-rim	144	1	10%
Sum		10	100%

## LIP FORMS

### MORTLACH TRADITION LIP FORMS

The majority of Mortlach Tradition sherds show no lip form (Table 5). The remaining sherds show one example each of Square lip, Beveled Exterior, Wedged lip, Inward L-shaped lip, and Braced lip. The remaining sherds do not have lips, and M109 is square with notches. M110 looks as though a piece of clay had been attached to the inside, as it is raised above the rest of the surface. The lip above the brace angles upward slightly, forming a channel that runs along the lip. The outside of the lip has oblique notches. M113 features a round lip with notches and the rim angles outward. M115 flares out in both directions, and its lip is notched. M142 has a lip that angles inward, while M108, M112, M188, M121, M130, and M131 do not have lips due to breakage.

*Table 5. Mortlach Tradition Lip Forms*

Lip Form	Catalogue No.	Count	Percent
Square	109	1	9.1%
Beveled Exterior	113	1	9.1%
Wedged	115	1	9.1%
Inward L-shaped	142	1	9.1%
Braced	110	1	9.1%
No lip	108, 112, 118, 121, 130, 131	6	54.5%
Sum		11	100%

### FORT YATES PHASE LIP FORMS

The Fort Yates Phase lips are all rounded (M111, M114, M143), with one exception that has no lip at all (M126).



## LATE NORTHERN PLAINS PATTERN LIP FORMS

The vast majority of Late Northern Plains Pattern sherds have no lip (Table 6). Of the three that do, one is Wedged, one is a Square Lip and one is Braced. M116 has a Braced lip that widens toward the outside and notches.

*Table 6. Late Northern Plains Lip Forms*

Lip Form	Catalogue No.	Count	Percent
Wedged	5	1	3.7%
Square	6	1	3.7%
Braced	116	1	3.7%
No lip	7-15, 117, 119, 120, 122-125, 127-129, 132, 144-147	24	88.9%
Sum		27	100%

## ***SURFACE FINISH***

The Snyder V ceramic assemblage features three types of surface finish: Smooth, Burnished, and Textile Impressed. Fine Smooth has a fine texture where the surface is mostly clay particles. This effect was caused by rubbing to bring clay to the surface. Sandy Smooth is a variant that is characterized by a coarser texture. When touched, a thin layer of sand can be felt. Burnished has a bright sheen due to polishing during production. Textile Impressed surfaces have rows of depressions. These are shaped like the fibers in the cloth bags that were used as moulds. In an Obliterated finish the textile impression is smeared, but the impression is still visible (Syms and Dedi 2007:6).

## MORTLACH TRADITION SURFACE FINISH

The largest group of Mortlach Tradition sherds shows a Fine Smooth finish (Table 7). The remaining sherds have Sandy Smooth (2), Obliterated (2), Textile (1), and Burnished (1) finishes. This means that the vast majority of Mortlach Tradition sherds have some sort of smoothed surface (Fine Smooth, Sandy Smooth, Obliterated, and Burnished are all examples of smoothing).

*Table 7. Mortlach Tradition Surface Finishes*

Finish	Catalogue No.	Count	Percent
Fine Smooth	108-110, 121, 142	5	45.5%
Sandy Smooth	112, 130	2	18.2%
Obliterated	113, 131	2	18.2%
Textile	118	1	9.1%
Burnished	115	1	9.1%
Sum		11	100.1%

## FORT YATES PHASE SURFACE FINISH

The Fort Yates Phase category (M111, M114, M126, M143) only shows the Sandy Smooth finish.

## LATE NORTHERN PLAINS PATTERN SURFACE FINISH

The largest group of Late Northern Plains Pattern sherds has Sandy Smooth finish (15), and the second largest has Fine Smooth (10) (Table 8). There are also a few examples of Textile (2), Obliterated (5), and Burnished (3) finishes.

*Table 8. Late Northern Plains Surface Finishes*

Finish	Catalogue No.	Count	Percent
Fine Smooth	5, 8, 9, 116, 117, 119, 125, 128, 129, 135	10	27.7%
Sandy Smooth	6, 7, 11-15, 120, 122, 127, 133, 144, 146, 147, 149	15	41.7%
Textile	35, 124	2	5.6%
Obliterated	10, 16, 33, 139, 145	5	13.9%
Cord Wrapped Paddle	134	1	2.8%
Burnished	34, 123, 132	3	8.3%
Sum		36	100%

## TEMPER TYPE

The following temper types are recognized: Natural, Grit, Bone, Shell, Grog, and Plant Fiber. Natural temper consists of crushed granite with worn edges that was weathered and found crushed. Grit temper consists of granite that was crushed by people. It has sharp edges. Bone and Shell temper are made of those materials, as the names indicate. Grog comprises bits of crushed ceramic used as temper. Plant Fiber temper is composed of pieces of plants. It burns away during production, leaving behind a hole where the temper was (Syms and Dedi 2007:18).

## MORTLACH TRADITION

The temper type is typical for the Northern Plains. The Mortlach Tradition sherds show large amounts of Natural (8) and some Grit (2) temper.

## FORT YATES PHASE

Consistent with the findings of Josephs 2005, all Fort Yates Phase sherds from DhMg-6 show Grit tempering made of granodiorite.

## LATE NORTHERN PLAINS PATTERN

The Late Northern Plains Pattern sherds show nearly equal amounts of Natural (15) and Grit (19) tempering (Table 9). There are also a few examples that show Shell Tempering. Shell Temper is very rare in the Northeastern Plains, but is quite common among Oneota groups to the south.

*Table 9. Late Northern Plains Temper Type*

Temper Type	Catalogue No.	Count	Percent
Natural	10-14, 116, 117, 123, 124, 127, 129, 132, 134, 139, 149	15	41.7%
Grit	5-9, 15, 16, 33-35, 119, 120, 122, 125, 128, 133, 135, 144	18	50%
Shell	145-147	3	8.3%
Sum		36	100%

## TEMPER SIZE

In the tables in this section, Fine temper is less than 1mm, Medium temper is 1-3mm, and Coarse is over 3mm (Syms and Dedi 2007:18).

## MORTLACH TRADITION TEMPER SIZE

The Mortlach Tradition sample has roughly equal amounts of Fine and Medium sized temper (Table 10).

*Table 10. Mortlach Tradition Temper Size*

Temper Size	Catalogue No.	Count	Percent
Medium	115, 121, 130, 142	4	36.4%
Fine	108-110, 112, 113, 118, 131	7	63.6%
Sum		11	100%

## FORT YATES PHASE TEMPER SIZE

All sherds in the Fort Yates Phase sample have Fine temper. In his petrographic analysis on Fort Yates Phase sherds, Josephs (2005:117) concluded that the large temper size was employed to reduce the problems of shrinking and swelling of the clay matrix, and that the large amount of coarse grained temper indicates that the sherds served a utilitarian (specifically, cooking) purpose.

## LATE NORTHERN PLAINS PATTERN TEMPER SIZE

The greater majority of Late Northern Plains Pattern sherds are Fine temper, although some sherds have Medium sized temper instead (Table 11). Sherds M120 and M123 have very

Fine temper that can only be seen under a hand lens. M6 has two pieces that are exactly 1mm in diameter, and others that are larger.

*Table 11. Late Northern Plains Temper Size*

Temper Size	Catalogue No.	Count	Percent
Medium	5, 6, 10, 13, 117, 144, 145	7	19.4%
Fine	7-9, 11, 12, 14-16, 33-35, 116, 119, 120, 122-125, 127-129, 132-135, 139, 146, 147, 149	29	80.6%
Sum		36	100%

### **TEMPER DENSITY**

The density of the temper of a given sherd was measured by counting the pieces of temper along a 3cm section of its edge (Syms and Dedi 2007:18). A hand lens was used, and all pieces of temper, even the finest, were counted. Density categories are as follows: Low density (0-14 pieces of temper), Medium density (15-30 pieces of temper), and High density (30+ pieces of temper).

### **MORTLACH TRADITION TEMPER DENSITY**

Most Mortlach Tradition sherds have a Low density of temper, although some display a Medium density (Table 12). M108 and M110 are near the bottom of the Medium density range (15-29 pieces of temper). M109, M115, M118, and M142 have very Low density. M113 is in the middle of the Medium density range.

*Table 12. Mortlach Tradition Temper Density*

Temper Density	Catalogue No.	Count	Percent
High	121	1	9.1%
Medium	108, 110, 112, 113	4	36.4%
Low	109, 115, 118, 130, 131, 142	6	54.5%
Sum		11	100%

### **FORT YATES PHASE TEMPER DENSITY**

In temper density, the Fort Yates Phase sherds are mostly Medium with one Low density sherd. Even the Low density sherd is at the upper end of the Low range (0-14 pieces of temper), and the Medium density sherds range from the low end to the high end of the Medium range (15-30 pieces of temper).

## LATE NORTHERN PLAINS PATTERN TEMPER DENSITY

As with the Mortlach Tradition sherds, the majority of the Late Northern Plains Pattern sherds have a Low density of temper, though some of them have a Medium density (Table 13).

*Table 13. Late Northern Plains Temper Density*

Temper Density	Catalogue No.	Count	Percent
Medium	10, 11, 15, 117, 123, 124, 144	7	19.4%
Low	5-9, 12-14, 16, 33-35, 116, 119, 120, 122, 125, 127-129, 132-135, 139, 145-147, 149	29	80.6%
Sum		36	100%

## COMPARISON OF SNYDER V WITH SNYDER I

The greatest difference between Snyder V and Snyder I is variability (Table 14). Snyder I ceramics have a very small set of decorations (only 3) (Syms and Wiecek, 2010). Snyder V ceramics have a far larger range of measurements and 12 types of decorations as opposed to three.

*Table 14. Comparison of Decorations between Snyder I and Snyder V*

Decoration	Snyder I	Snyder V			
	Harmon Complex	Mortlach Tradition	Late Northern Plains	Fort Yates Phase	Oneota
Notching	3 (33.3%)	3 (21.4%)	1 (3.3%)		
CWOI	2 (22.2%)	5 (35.7%)			
Stamped	1 (11.1%)				
Incised		1 (7.1%)	3 (10%)		
Cord Impressed		1 (7.1%)	1 (3.3%)	4 (100%)	
CWBI		1 (7.1%)			
Finger Pinched		1 (7.1%)			
Roulette Stamps		1 (7.1%)			
Simple Stamped			3 (10%)		
Stab and Drag			2 (6.7%)		
Combed			2 (6.7%)		
Piceated			1 (3.3%)		
Trailed					4 (100%)
None	3 (33.3%)	1 (7.1%)	17 (56.7%)		
Sum	9	14	30	4	4



In addition, all Snyder I ceramics have been associated with the Harmon Complex, which is unique to Snyder I (Fig. 8). As shown above, the Snyder V ceramics are divided between Mortlach Tradition, Fort Yates Phase, and Late Northern Plains Pattern. The Mortlach Tradition is found throughout southern Saskatchewan, Fort Yates Phase is found in North Dakota, and Late Northern Plains Pattern is spread throughout the Northeastern Plains.

*Fig. 8. Snyder I and Snyder V sherds compared.*

## COMPARISON OF SNYDER V WITH THE BROCKINTON SITE

The Snyder V sample shows much greater variability than does the Brockinton Site (DhMg-7) Occupation 3 sample (Skalesky et al., 2009) (see Fig. 9 and Table 15). The latter consists of the Williams Complex, whereas the former includes Mortlach Tradition, Fort Yates Phase, and other Late Northern Plains Pattern sherds. In addition, the dominant decorations in Williams (Incised, Stamped, and Trailed) are in the minority in the Snyder V sample. Like the Harmon Complex at Snyder I, the Williams Complex at the Brockinton Site is unique to that site. This means that Snyder V, Snyder I, and the Brockinton Site are all in very close geographic proximity, but are very different culturally.



*Fig. 9. Brockinton Site and Snyder V sherds compared.*

Table 15. *Comparison of Decorations between Brockinton Site (Occupation 3) and Snyder V*

Decoration	Brockinton Site	Snyder V			
	Williams Complex	Mortlach Tradition	Late Northern Plains	Fort Yates Phase	Oneota
CWOI	11 (27.5%)	5 (35.7%)			
Trailed	6 (15%)				4 (100%)
Incised	4 (10%)	1 (7.1%)	3 (10%)		
Other Stamped	4 (10%)				
Cord Impressed	3 (7.5%)	1 (7.1%)	1 (3.3%)	4 (100%)	
Hollow Stamped	2 (5%)				
Notching	1 (9.1%)	3 (21.4%)	1 (3.3%)		
Rounded Castellations	1 (9.1%)				
CWBI		1 (7.1%)			
Finger Pinched		1 (7.1%)			
Roulette Stamps		1 (7.1%)			
Simple Stamped			3 (10%)		
Stab and Drag			2 (6.7%)		
Combed			2 (6.7%)		
Piceated			1 (3.3%)		
None	8 (20%)	1 (7.1%)	17 (56.7%)		
Sum	40	14	30	4	4

## DISCUSSION

The lithic artifacts recovered indicate that hunting was practised at Snyder V (see Appendix B for a summary of lithic artifacts). The artifacts are the toolkit of a hunter-gatherer, with no farming equipment found. There are two ways of explaining the lack of farming artifacts. Firstly, farming was never practiced there. The occupants were strictly nomadic hunter-gatherers of the sort who lived on the Northern Plains, and in historic times identified as Assiniboin. Alternatively, it is possible that farming was practiced at the site, but the Syms and Nash surveys did not recover its remains.

The ceramics recovered fall into three categories: the Mortlach Tradition, the Fort Yates Phase, and the Late Northern Plains Pattern. Of the three cultural categories, LNPP is represented by the most sherds. It consists of sherds that do not have the diagnostic features required to assign them to a more specific taxon. The second largest group consists of Mortlach Tradition potsherds. These sherds indicate a connection with groups to the west, in southern Saskatchewan and Alberta. The smallest group of sherds is associated with the Fort Yates Phase from the Middle Missouri area, and indicate some sort of connection with agricultural village groups to the south. See Appendix C for evidence of use in Snyder V ceramics.

The great diversity at Snyder V has been established to be completely different from its northern counterpart; the two sites are associated with completely different cultures (Mortlach Tradition, Fort Yates Phase, and LNPP vs Harmon Complex). The Harmon Complex is dated to 1450 to 1600 CE, the Mortlach Tradition is dated to 1500-1700 CE



(Syms *et al.*, 2014), and the Fort Yates Phase is dated from 1200 to some time after 1450 CE (Calabrese, 1972). There is some overlap in time, but there is also a possibility that they are from different points in time. Snyder V appears to have been inhabited by the makers of Mortlach Tradition pottery, as a significant portion of the sherds are Mortlach Tradition. However, there is an even more significant portion of LNPP sherds, and the lack of diagnostic features means that they could have been made by any number of groups. The small portion of Fort Yates Phase sherds suggests that they were imported. A trade hypothesis would explain the presence of beans and corn and the lack of farming artifacts. This is not uncommon; Walde noted (2003:85) that Mortlach Tradition sites south of the Parklands often contained some Middle Missouri sherds with Cord Impressions. Therefore, the Fort Yates Phase sherds indicate that this is a typical southern Mortlach Tradition site.

So what kind of group or groups inhabited the site? The ceramic assemblage does not provide a definite answer, and the possibility is wide open that the answer is not a simple one. There may have been a polyethnic unit living here, or there may have been multiple groups. The wide diversity of ceramic assemblages in the Gainsborough-Souris Locality indicates that a huge variety of people inhabited this area for centuries. This fits in with the Co-Influence Sphere Model (Syms, 1977), the successor to the older Chronological Model. The latter assumes that there was one culture per region, and that they do not overlap in space and time. The former assumes that many cultures can occupy a given region at the same time, and interact with one another. A culture may occupy an area as its homeland, or it may regularly visit an area, or it may make more infrequent trips, and these all happen simultaneously. The diversity of materials within Snyder V, which shows ties to both Saskatchewan and North Dakota, suggest this sort of diversity of occupants.

There is further research to be done. 1) Excavate Snyder V to recover artifacts with stratigraphic context, which the surface collection in this report lacks. Stratigraphic context could shed much light on the artifacts discussed in this report. 2) Establish how ceramic assemblages relate to groups of people, and determine how ceramic traits can (and cannot) be used to identify groups and their boundaries in the Gainsborough-Souris Locality. 3) Determine how people interact and exchange ceramic design in the Gainsborough-Souris Locality and beyond. It has been well established that there were many distinct material culture assemblages in a small area of the Northern Plains. 4) Establish the movement of people in the area. This will contribute significantly to a culture history of the area.

## CONCLUSION

From 1970 to 2011, Snyder I was one site on two sides of Gainsborough Creek. It had two Borden numbers: DhMg-4 on the north side, and DhMg-6 on the south side. This analysis of the ceramics has found that the two sides of the site are culturally distinct and should be treated as separate sites.

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## REFERENCES CITED

Boyd, Matthew

- 2002 Identification of anthropogenic burning in the paleoecological record of the northern Prairies: A new approach. *Annals of the Association of American Geographers* 92:471-487
- 2010 Starch and Phytolith Analysis of Carbonized Food Residue and Soil. Final Report prepared for Dr. Leigh Syms and Kevin Brownlee, Manitoba Museum

Boyd, Matthew, Tamara Varney, Clarence Surette, and Jennifer Surette

- 2008 Reassessing the Northern Limit of maize Consumption in North America: Stable isotope, Plant Microfossil, and Trace Element content of Carbonized Food Residue. *Journal of Archaeological Science* 35:2545-2556

Boyd, Matthew and Clarence Surette

- 2010 Northernmost Precontact Maize in North America. *American Antiquity* 75(1):117-133

- Boyd, Matthew, Clarence Surette, and B. A. Nicholson  
2006 Archaeobotanical Evidence of Prehistoric Maize (*Zea mays*) consumption at the northern edge of the Great Plains. *Journal of Archaeological Science* 33:1129-1140
- Calabrese, F. A.  
1972 Cross Ranch: A Study of Variability in a Stable Cultural Tradition. *Plains Anthropologist* 17(58): 1-67  
1973 Discriminant Analysis of Certain Middle Missouri Tradition Projectiles. *Plains Anthropologist* 18(62): 344-349
- Duddleson, J. Ryan  
2008 Plains Woodland Pottery: A Use-Alteration Perspective. *Plains Anthropologist* 53(206):179-197.
- Ellis, J. H. and W. H. Shafer  
1974 Reconnaissance Soil Survey of South-Western Manitoba. Manitoba Department of Agriculture.
- Fagan, Brian  
2005 *Ancient North America*. Thames and Hudson, London.
- Josephs, Richard L.  
2005 A Petrographic Analysis of Extended Middle Missouri Ceramics from North Dakota. *Plains Anthropologist* 50(194):111-120
- Low, Bruce  
1995 Southern Manitoba Glaciofluvial Outwash Deposits. *Manitoba Archaeological Journal* 5(1):80-86.
- Nicholson, B.A.  
1990 Ceramic Affiliations and the Case for Incipient Horticulture in Southwestern Manitoba. *Canadian Journal of Archaeology* 16: 33-60.  
1991 Modeling a Horticultural Complex in South-central Manitoba during the Late Prehistoric Period – the Vickers Focus. *Midcontinental Journal of Archaeology* 16: 163-188.  
1994 Interactive Dynamics of Intrusive Horticultural Groups Coalescing in South-Central Manitoba During the Prehistoric Period – The Vickers Focus. *North American Archaeologist* 15(2): 103-127.
- Nicholson, B.A. and Scott Hamilton  
1997 Material Correlates Accompanying Transitions by Vickers Focus People from a Horticulture/Forager Economy to an Intensive Forage/Bison Economy. *Manitoba Archaeological Journal* 7(2): 37-49.

- 1999 Vickers Focus and Mortlach Ceramics at Makotchi-Ded Dontipi- A Linear Relationship? *Manitoba Archaeological Journal* 9(1): 11-27.
  - 2001 Cultural Continuity and Changing Subsistence Strategies During the Late Precontact Period in Southwestern Manitoba. *Canadian Journal of Archaeology* 25:53-73
- Nicholson, B.A., Scott Hamilton, Garry L. Running IV, and Sylvia Nicholson
- 2006 Two Cultures – One Environment: Vickers Focus Adaptations Contrasted with Blackduck Adaptations in the Tiger Hills. *Plains Anthropologist* 51:335-354
- Nicholson, B.A. and Dion Wiseman
- 2007 Introduction to Building a Contextual Milieu. *Canadian Journal of Archaeology* 31(3):1-9
- Low, Bruce
- 1995 Southern Manitoba Glaciofluvial Outwash Deposits. *Manitoba Archaeological Journal* 5(1):80-86
- Skalesky, Nicole, E. Leigh Syms, Vanda Fleury, and Susan Broadhurst.
- 2009 The Williams Complex: A New Late Northeastern Plains Ceramic Culture from the Brockinton Site (DhMg-7), Southwestern Manitoba. Draft manuscript at the Manitoba Museum, Winnipeg
- Syms, E. Leigh
- 1977 Cultural Ecology and Ecological Dynamics of the Ceramic Period in Southwestern Manitoba. *Plains Anthropologist Memoir* 12
  - 1980 A Description and Analysis of the Nash Random Survey Sample, Southwestern Manitoba, 1972-73: A Compendium. Data Log No. 1, Southman Human Adaptation and Palaeoenvironmental Explorations (SHAPE), Brandon University, Brandon
  - n.d. The Rise and Development of Plant Cultivation and Domestication in Eastern North America. Manuscript on file at The Manitoba Museum.
- Syms, E. Leigh and Teija Dedi
- 2007 *Manual of Detailed Attribute Fields for Cataloguing of Precontact Ceramics*. The Manitoba Museum, Winnipeg
- Syms, E. Leigh and Matthew Wiecek
- 2010 The Snyder I Site (DhMg-4): The Definitive Late Precontact, Harmon Complex Site on the Northeastern Plains of Southwestern Manitoba. Draft manuscript on file in The Manitoba Museum.

Syms, E. Leigh, Scott Hamilton, and Terry Gibson

- 2006 In Search of More First Nations Agricultural Activity with New Technology: Snyder II Site (DgMg-15,17) Revisited. Manitoba Archaeological Society Annual Conference, Winnipeg. Nov. 4, 2006.

Syms, E. Leigh, Teija Dedi, Gary Wowchuk, Kayleigh Speirs, and Susan Broadhurst

- 2014 Identifying New Late-Woodland Ceramic Traditions in The Swan Valley, Western Manitoba. *Manitoba Archaeological Journal* 24(1-2):1-92.

Walde, Dale A.

- 2003 The Mortlach Phase. Occasional Paper No. 2, Archaeological Society of Alberta, Calgary
- 2006 Avonlea and Athabaskan Migrations: A Reconsideration. In *Plains Anthropologist* 51(198):185-198
- 2010 Ethnicity, the Archaeological Record and Mortlach. In *Plains Anthropologist* 55(214):153-168

Zarillo, Sonya and Brian Kooyman

- 2006 Evidence for Berry and Maize Processing on the Canadian Plains from Starch Grain Analysis. *American Anthropologist* 71(3):473-499

**APPENDIX A: SUMMARY OF CERAMIC ARTIFACTS FROM SNYDER V***Table 16. Summary of Ceramic Traits in Snyder V Sherds*

	Mortlach Tradition	Fort Yates Phase	LNPP
<b>Decoration</b>			
Combed			1
Cord Impressed	1	4	1
CWOI	6		
Dentate Stamps	1		
Fingernail Incised			1
Fingernail			
Pinched	2		1
Incised			2
Notching	3		2
Piceated			1
Simple Stamped	1		6
Trailed			4
None	1		16
<b>Lip Form</b>			
Beveled Exterior	1		
Braced	1		1
Inward L-shaped	1		
Rounded		3	
Square	1		1
Wedged	1		1
No Lip	6	1	32
<b>Rim Form</b>			
Excurvate	1		5
S-rim	7	4	3
Straight	1		
Undetermined	2		9
<b>Surface Finish</b>			
Burnished	1		4
Fine Smooth	5		10
Obliterated	2		5
Sandy Smooth	2	4	16
Textile	1		2
<b>Temper Type</b>			
Grit	3	3	8
Natural	8		7
None	2		8
<b>Temper Size</b>			
Fine	6	3	5
Medium	5		1
None	2		7

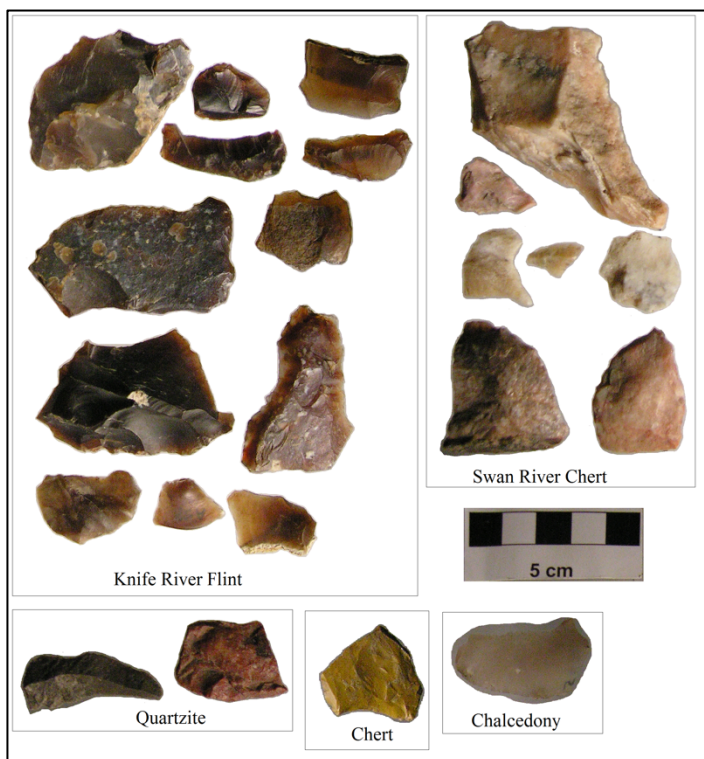
## APPENDIX B: SUMMARY OF LITHIC ARTIFACTS FROM SNYDER V

Fifty-eight lithic artifacts are discussed in this report (Table 18). More were recovered from Snyder V during the surface survey in which they were recovered, but they were not accessible to the authors at the time of writing. All percentages and fractions of the total sample are out of 58 unless otherwise specified.

Table 18. Summary of Lithic Artifacts from Snyder V

Lithic	Count	Percent	Catalogue No.
Biface	9	15.5%	M39, M60, M72, Nash Plate (3)
Chitho	1	1.7%	M66
Chopper	4	6.8%	M26, M57, M63
Core	3	5.1%	M53
Hammerstone	1	1.7%	M68
Projectile Point	2	3.4%	M42, M61
Retouched Flakes	13	22%	M20, M22, M47, M50, M59, Nash Plate (1)
Scraper	2	3.4%	M49
Trade Block	1	1.7%	M52
Utilized Flakes	22	39%	M27, M28, M29, M51, M58, M62, Nash Plate (1)
Sum	58	100.1%	

### UTILIZED FLAKES



The largest group of lithic artifacts comprises utilized flakes (Fig. 10, Table 19). The majority of the utilized flakes are Knife River Flint (12/23). There is a large minority of Swan River Chert (7/23) and a few are quartzite (2/23) and chalcedony (1/23).

Fig. 10. Utilized flakes.

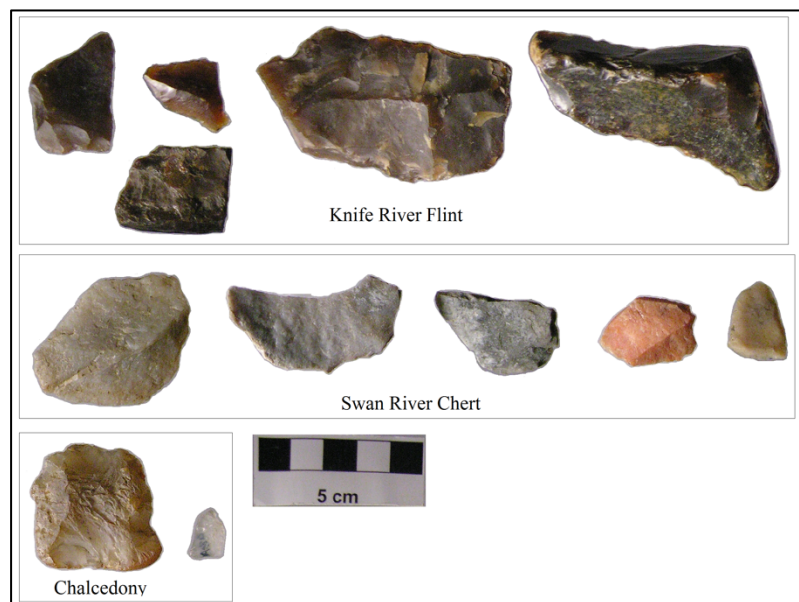


*Table 19. Raw Material Frequencies in Snyder V Lithics*

Material	Count	Percent	Artifacts
Knife River Flint	22	41.5%	Utilized Flakes (12/22, 55%) Retouched Flakes (6/13, 50%) Cores (3/3, 100%) Scrapers (2/2, 100%) Trade Block (1/1, 100%)
Swan River Chert	19	35.8%	Utilized Flakes (7/22, 32%) Bifaces (4/8, 50%) Retouched Flakes (5/13, 33%) Choppers (3/4, 75%) Projectile Points (1/2, 50%)
Chalcedony	4	7.5%	Retouched Flakes (2/13, 17%) Bifaces (1/8, 12.5%) Utilized Flakes (1/22, 4.5%)
Quartzite	3	5.7%	Utilized Flakes (2/22, 9%) Chopper (1/4, 25%)
Porcelanite	1	1.9%	Projectile Points (1/2, 50%)
Diorite	1	1.9%	Chitho (1/1, 100%)
Granite	1	1.9%	Hammerstone (1/1, 100%)
Tongue River Silicified Sediment	1	1.9%	Bifaces (1/8, 12.5%)
Chert (possibly from Souris sands and gravels)	1	1.9%	Utilized Flakes (1/22, 4.5%)
Sum	53	100%	

## RETOUCHED FLAKES

The second largest group of lithic artifacts is the retouched flakes (Fig. 11). They are primarily Knife River Flint (6/12), the second largest group is made of Swan River Chert (4/12), and the remainder are of chalcedony (2/12). All the flakes vary considerably in size, from less than two centimetres across to more than eight centimeters. The locale of Swan River Chert ranges from the Swan River Valley in the north to its

*Fig. 11. Retouched flakes*

southernmost extent near the city of Brandon. The Tiger Hills had extensive Swan River Chert deposits that were used by local groups. In addition, lithic resources were also found in the area bordering the Pembina Valley (Low 1995:84). Knife River Flint comes from western North Dakota.

## BIFACES

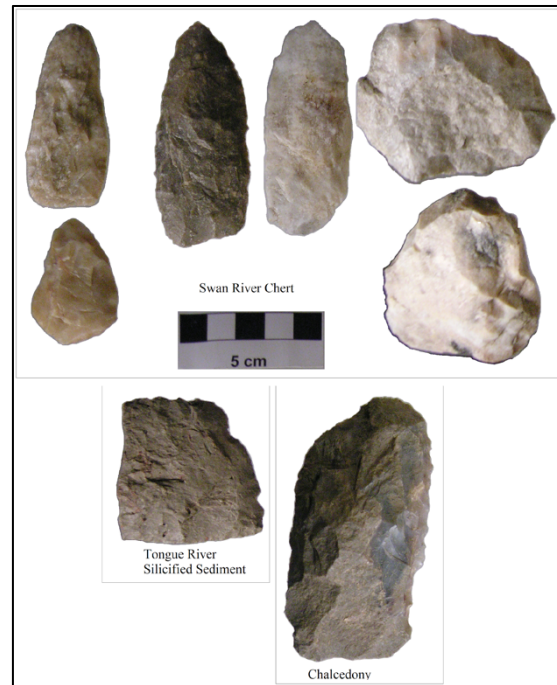
There are nine bifaces present, comprising 16% of the sample (Fig. 12). One is two centimetres across; the rest measure five to ten centimetres across. They are mainly of Swan River Chert (with one of the dark variety), with some possible chalcedony and Tongue River Silicified Sediment in small numbers.

## CHOPPERS

The remaining artifacts are present in small numbers. There are four choppers, three of Swan River Chert and one of quartzite (Fig. 13). One chopper has a very thick and prominent red stain at one end, and a smaller red stain at the other. This is caused by heat treatment of the chopper: heating causes iron to move to the surface, where it oxidizes into red iron oxide. In addition to the choppers, there are three cores, all of Knife River Flint. They are three centimetres, five centimetres, and ten centimetres along their longest dimensions.

## PROJECTILE POINTS AND SCRAPERS

Projectile points and scrapers are both present, with two each (Fig. 14). The projectile points are Swan River Chert and porcelanite, and are one to two centimetres across. One is intact, and the other is broken (missing notches and the tip is incomplete). The scrapers are Knife River Flint, and are each two centimetres across.



*Fig. 12. Bifaces.*



*Fig. 13. Choppers.*

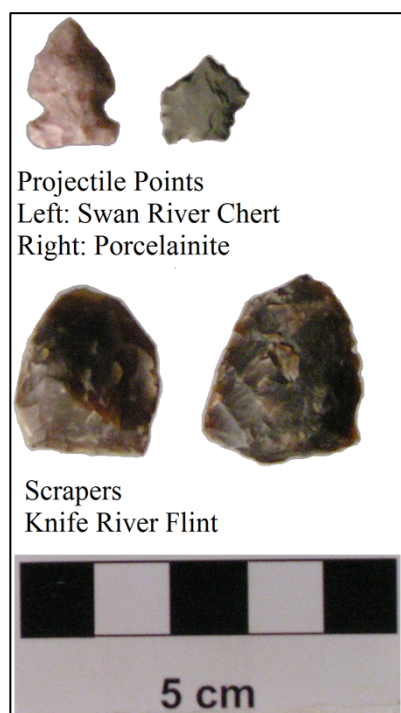


Fig. 14. Projectile points (top) and scrapers (bottom).

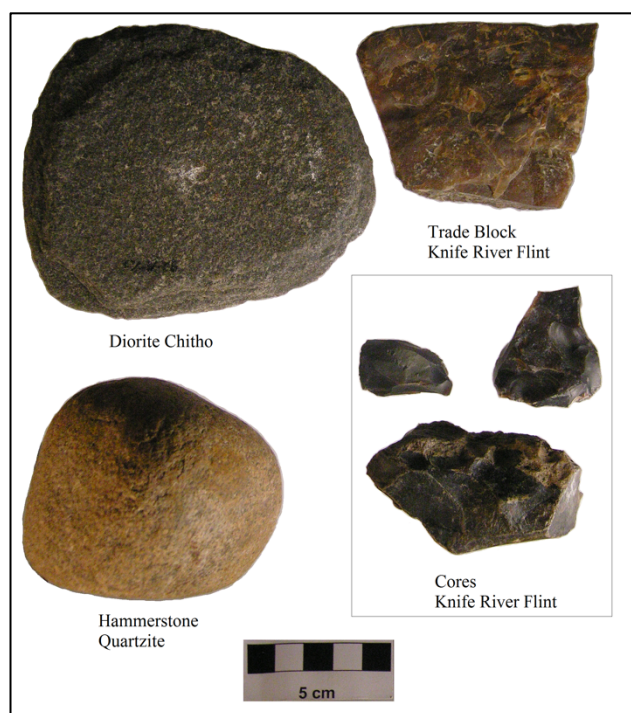


Fig. 15. Trade block, cores, hammerstone, chitho

## MISCELLANEOUS LITHICS

The sample contains a chitho, a trade block, a hammerstone, and a biface preform (Fig. 15). The chitho is of diorite and is 12 centimeters across its long dimension. The trade block is Knife River Flint and is seven centimetres across. The hammerstone is quartzite and nine centimetres across.

## APPENDIX C: EVIDENCE OF USE IN SNYDER V CERAMICS

Use-alteration research is concerned with studying the traces that are left on pottery by the activities for which the pots were used (Duddleson 2008). Encrustation analysis by Matthew Boyd (2010) has found evidence of maize (*Zea mays*) and beans (*Phaseolus vulgaris*). Such a deposit consists of carbonized food residue, and this encrustation is found in the vast majority of sherds in this sample. Table 17 lists the positive identifications.

Table 17. Evidence of Use in Sherds from Snyder V

Food Residue	Count	Catalogue No.
Mortlach Tradition	8	108-110, 113, 121, 130, 131, 142
Fort Yates Phase	3	111, 114, 143
Late Northern Plains Pattern	13	8-10, 119, 120, 123, 125, 128, 133, 139, 144, 146, 147